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Lewis W. Britton

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The St. Lawrence Seaway— To Mid-Continent by Ocean Vessel

Lewis W. Britton

WHEN, IN 1536, the white fingers of the Lachine Rapids barred the further westward progress of Jacques Cartier in the St. Lawrence River there were aroused the tensions inevitably fostered in man by any challenge of nature.

On April 25, 1959 — 423 years later — the navigation season opened on the improved St. Lawrence Seaway. The dream of Cartier, and many others in the intervening centuries, of a waterway into the interior of the North American Continent had been realized.

THE AUTHOR is Executive Editor of Traffic World magazine.

On June 26, 1959, when Queen Elizabeth II and President Eisenhower formally dedicated the Seaway and symbolically "opened" it to navigation the tensions created by nature's challenge were ceremonially laid to rest.

Completion of the Seaway was an achievement, also, in the realm of the spirit. Queen Elizabeth and President Eisenhower, in addresses at the dedication ceremonies, hailed the opening of the improved Seaway as the most outstanding of the joint accomplishments of Canada and the United States.

However, the accomplishment was not free from difficulty and delay. Although the Canadian statute authorizing the construction and operation of the Canadian segment of the Seaway was assented to by King George VI on December 21, 1951,¹ American legislative action did not follow immediately. The proposed joint endeavor was frustrated by some United States opposition, and it was not until 1954 that the American proponents of an improved Seaway succeeded in obtaining the enabling legislation.²

Characterization of the completed project as the "improved" Seaway is merely factual reporting. As stated in the *St. Lawrence Seaway Manual*.³

In the heat of the seaway controversy the layman may have been led

1. St. Lawrence Seaway Authority Act, 1951, 15 & 16 Geo. 6, c. 24 (Can.).

2. St. Lawrence Seaway Act, 68 Stat. 93-96 (1954), as amended, 33 U.S.C. §§ 981-90 (Supp. IV, 1958). This act created the St. Lawrence Seaway Development Corporation to construct, maintain, and operate the American segment of the Seaway.

3. Senate Comm. on Foreign Relations, *St. Lawrence Seaway Manual*, S. Doc. No. 165, 83d Cong., 2d Sess. 10 (1954). The manual is a compilation of documents on the Great Lakes Seaway project and the correlated power development made for the United States Senate.

to believe that improvement of the St. Lawrence navigationally presented an entirely new question. Actually, this is far from the case. The upper St. Lawrence has been used for navigation for more than a hundred years under improvements accomplished by Canada. Canada completed the present 14-foot system at the turn of the century, eight years before Congress authorized a 9-foot project on the Ohio River, and 30 years after Congress authorized initial dredging improvements in the St. Mary's River connecting Lakes Superior and Huron.⁴

FINANCING THE SEAWAY

The Canadian and American statutes provided for joint action of the governments of the two countries to determine the tolls to be charged ships and their cargoes for the use of the Seaway. Those tolls were announced in March 1959, in advance of the opening of the 1959 navigation season.

The enabling legislation also provided that the cost of the Canadian and American segments of the project be paid from tolls collected in the first 50 years of operation. The toll revenues are divided as follows: Canada, 79 per cent, United States, 21 per cent.

On the basis of the announced tolls, and with certain assumptions as to the tonnage and the gross registered weight of the ships which will carry that tonnage, it has been estimated that Canada will pay the cost of its Seaway works (presently set at \$330 million) by the year 2011, while the United States will have paid off the cost of its portion of the works (\$128 million) by the year 1997.⁵

The traffic estimates have been a source of bitter dispute. Proponents of the Seaway have been charged with over-optimism concerning the tonnage which will transit the Seaway.

The estimate of the time in which Canada and the United States will be able to pay their apportioned shares of the cost of the Seaway was based on an anticipated annual volume of tonnage. For 1959 and 1960, it was assumed that the Seaway would handle 17 million and 34.8 million tons, respectively; for 1961, 1962, and 1963, it was anticipated that the annual tonnage would be increased by approximately 5 million tons a year; and for 1964 on, it was estimated that the average annual tonnage would be 53.4 million.

DEVELOPMENT OF THE SEAWAY

A challenge faced Cartier and others who envisaged the possibility of tapping the resources of the mid-continent by way of the St. Lawrence River. How could a ship be lifted from sea level to 601.6 feet above sea level at Duluth?

By degrees, man responded to the challenge. The first canals, built in 1783, were only two feet deep. By 1850, the Canadians had

4. *Id.* at 35.

5. *Traffic World*, July 4, 1959, p. 32.

completed nine-foot canals to the Upper Lakes, and, by 1914, the depth had become 14 feet. Then the ultimate was foreshadowed when, in 1932, Canada completed the Welland Ship Canal, 27 miles in length, with a governing depth of 25 feet.

But the ships which could be accommodated by the 14-foot channels of the waterway were too small to serve in world trade to any appreciable extent. New and larger locks were necessary, and channels had to be dredged to the required depth of 27 feet.

The usable length of the two new locks on the United States side of the river, and of the five new locks built by Canada, is 730 feet. The locks are 80 feet wide. Such a lock, containing 24 million gallons of water, can be filled or emptied in less than ten minutes.

Thus, where the former 14-foot canal system could accommodate vessels no more than 250 feet in length and 44 feet in beam, and with a draft of 14 feet and capacities for 1,500 tons of general cargo and 2,500 tons of bulk cargo, the improved St. Lawrence Seaway accommodates vessels measuring up to 730 feet in length, 75 feet in beam, and with a draft of 25.5 feet. These vessels will carry 7,500 tons of general cargo and as much as 25,000 tons of bulk cargo.

The improved Seaway, therefore, will afford passage for ships which can carry five times as much general cargo and ten times as much bulk cargo as the vessels accommodated by the 14-foot canal system. The prior necessity of transshipping from Great Lakes vessels into the smaller vessels which could make the passage eastward from Buffalo has been eliminated, and the transit of seven new locks instead of the twenty-two locks of the older system means an additional saving of time.

The task of providing for the improved waterway, according to data furnished by the St. Lawrence Seaway Development Corporation, required the preparation of engineering plans for more than one thousand contracts. The peak effort in meeting the completion "target date" required approximately 22,000 workers and the use of equipment valued at \$75 million. More than six million cubic yards of concrete were placed, and 360 million tons of rock and earth had to be dredged.

The achievement is summed up in these words:

Briefly stated, the project has included the deepening to 27 feet of the Welland Canal and approaches thereto in Lakes Erie and Ontario; the removal of scattered rock shoals in the 68-mile Thousand Islands section; the construction of four dams in the power phase of the 46-mile International Rapids section; the construction of seven new, modern navigation locks and four lateral canals to replace the 22 outmoded locks and six lateral canals in the old 14-foot canal system in the 110 miles of river above Montreal.⁶

6. Senate Comm. on Foreign Relations, *St. Lawrence Seaway Manual*, S. DOC. NO. 165, 83d Cong., 2d Sess. 17 (1954).

ANCILLARY IMPROVEMENTS

It should be noted here that the *St. Lawrence Seaway Manual* makes plain that the legislators interested in the improved Seaway were not confining their thoughts to what would be done in the St. Lawrence River alone. The *Manual* speaks of the "St. Lawrence River System" and defines it as comprising (1) all of the five Great Lakes — Superior, Michigan, Huron, Erie, and Ontario — with their drainage areas and connecting waterways, and (2) the St. Lawrence River proper from Lake Ontario to the Gulf of St. Lawrence and its tributaries. The *Manual* continues:

The St. Lawrence River system, in conjunction with the Gulf of St. Lawrence, provides a continuous waterway extending 2,347 miles into the heart of the continent from the Atlantic Ocean at the Strait of Belle Isle to Duluth, Minn.⁷

From the foot of Lake Ontario to Duluth the sailing distance is 1,162 miles and, to Chicago, it is 1,061 miles, by way of the five Great Lakes and their connecting channels. The connecting channels are the Niagara River between Lakes Ontario and Erie, where the Welland Canal bypasses Niagara Falls and the Whirlpool Rapids; the Detroit River; Lake St. Clair and the St. Clair River between Lakes Erie and Huron; the St. Mary's River with its locks at Sault Ste. Marie, between Lakes Huron, Michigan, and Superior; and the Straits of Mackinac between Lakes Huron and Michigan.

Although these connecting channels need improvement in order that full benefit may be derived from the works in the St. Lawrence River, they are, even today, very busy waterways. Those between Lakes Superior and Huron, and Lakes Huron and Erie, carry more tonnage than any other inland waterways in the world. In 1941 the traffic which passed through the Soo Locks exceeded 110 million tons, while the Detroit River in the same year bore more than 128 millions tons of traffic. The cargo was mostly iron ore, coal, and grain.

The Congress of the United States, recognizing the inadequacy of the connecting channels for the deep-draft vessels which will utilize the improved St. Lawrence Seaway, authorized the deepening of those channels to provide a minimum controlling depth of 27 feet. This project was found to be justified by existing Great Lakes traffic alone.

The project for deepening the connecting channels was initiated in May 1957. The United States Army Corps of Engineers, which was the design and construction agent for the American portion of the Seaway, has the responsibility for the channel improvements. That work could well be described as a large-scale underwater exca-

7. *Id.* at 19.

vation job, embracing the removal of about 64,000,000 cubic yards of earth and rock, and as a task exceeding any previous undertaking by the Corps in its 133-year experience on the Great Lakes. The target year for completion of the deepening of the channels is 1964. As previously noted, that is the first year in which it is estimated that the Seaway will accommodate more than 50 million tons of traffic.

The estimated cost of the deepening project is \$146.5 million. However, the Corps also states that estimated savings of about \$10 million annually in the cost of transportation of iron ore, stone, and grain will be achieved by reason of the improved channels.

The work will be done in the St. Mary's River, the Straits of Mackinac, the St. Clair River, Lake St. Clair, and in the Detroit River. Before any part of the work was begun, the controlling depths were twenty-one feet upbound and twenty-five feet downbound. The deeper downbound channels had been provided to accommodate the heavily-laden ore boats.

But the impact of the seaway, and the realization of the anticipated growth in foreign trade which it will engender, require more than the deepening of the connecting channels. The harbors of the Great Lakes cities must also be improved. Here, again, the United States Congress has prudently sought to be prepared. It has directed the Corps of Engineers to make a study to determine the advisability of further improvements of Great Lakes harbors in the interest of present and prospective deep-draft commerce.

The Corps will take into consideration prospective traffic, engineering design, and economic analyses in making its recommendations. It takes the official view that every improvement must be a sound investment. In the interim, the authorities of the Great Lakes port cities have not awaited completion of the study by the Corps to begin their own improvements. So active have port commissions become that some warning voices have been raised against harbor improvements which may not be found economically justified.

TARIFF POLICY

Perhaps as important as the physical aspect of the Seaway is the often neglected matter of the United States tariff policy. When the full potential of the improved Seaway is achieved, it is inevitable that there will be some call for a change in American tariff policy. If advantage is to be taken of the potential increase in foreign trade made possible by the Seaway's added shipping capacity, the traffic cannot all be outbound. Some balance will have to be struck and it remains to be seen whether the present system of international agreement, and the President's power to make certain adjustments in tariff tolls, will be adequate to meet the changed situation.

While there has been no call for those in responsible positions to

consider this particular facet of the foreign trade problem, some indication of the general position of the present Administration may be had.

In an address on May 21, 1959, before the Marketing Committee of the National Association of Manufacturers, Frederick H. Mueller, then Under Secretary and now Secretary of Commerce, gave some attention to "protectionism" in connection with his topic for the day, "The European Common Market." He said:

The philosophy of protectionism and the talk about pricing or "costing" ourselves out of the market are understandable and in some cases justified, but in the final analysis may create more problems than they solve. For every time we raise a tariff or impose a quota we lose a friend or a customer — or both — and we invite retaliation. These are problems that require the utmost understanding and statesmanship by management, labor leaders and government officials.⁸

Since his elevation to the office of Secretary of Commerce, Mr. Mueller has reaffirmed a "middle-of-the-road" position in the matter of free trade versus protectionism, pursuant to which each situation is to be handled on its own merits. It is impossible to venture beyond an indication of the present official statement of position. Economic and political factors will play their part in any future determinations in this area. Prediction would be futile.

CONCLUSION

A work of man of the magnitude encompassed by the St. Lawrence Seaway and its related power projects is one of no mean proportion. While one revels at the physical achievement which lies before him, he cannot, at the same time, help but be awed by the fact that two nations had wrought this work in cooperation. For here, in a way, is the apogee of man's answer, physically and spiritually, to the first challenge of the white fingers of the Lachine Rapids.

8. Address by Under Secretary Mueller to the Marketing Committee of the National Association of Manufacturers, in Washington, D. C., May 21, 1959.